

Intro

The JGA2063 is a universal control print with two digital inputs and two analogue outputs:

- Open input
- Close input
- Current output (0 ... 20 mA or 4 ... 20 mA)
- Voltage output (0 ... 5 V or 0 ... 10 V, max 100 mA@10 V)



Liability and warranty

Every JGA2063 is checked before sending for correct operation.
Therefore Boutronic has a warranty period of 1 year.

The warranty expires if:

- The defect is caused by gross negligence or by improper installation
- Repairs and/or modifications to the JGA2063 without permission from Boutronic.

Boutronic is in no way liable for damage caused as a direct or indirect consequence by the use of the JGA2063.

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Connections

In the figure below, the JGA2063 is shown schematically:

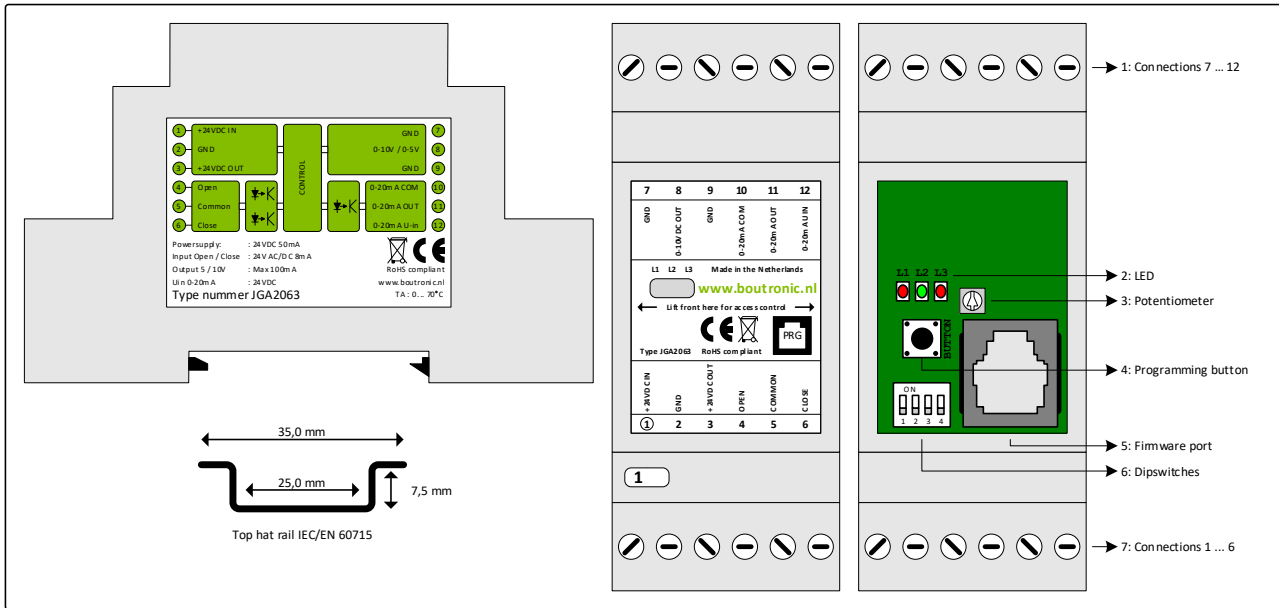


Figure 1: Schematic view JGA2063

Explanation

Nr	Name	Description
1	Connection 7 ... 12	Connections for current and voltage outputs
2	LED's	L1: Open LED. When this LED is on, the analogue output is increased L2: Close LED. When this LED is on, the analogue output is decreased L3: Prog LED. This LED is on when the program button is pressed
3	Potentiometer	With this potentiometer you can set the total drive time for the outputs going from minimum to maximum output level (30 ... 240 sec) ¹
4	Program button	Programming button to change program settings.
5	Firmware port	Connection to PCB (with a Boutronic dongle) for firmware update
6	DIP-switches	Switches to enable or disable functions (See chapter: DIP-switch 1 to 4)
7	Connection 1 ... 6	Connections for the supply and open or close inputs.

1. Drive time setting must be set to 0 sec.

Power supply in

The power supply for the JGA2063 is 20 ... 30VDC or 20 ... 24 VAC, internally single-sided rectified and feeds the internal controller and the voltage output. Taking into account that one of the AC is connected to the GND and that the voltage output functions with respect to the GND.

Supply	Min	Max
AC	20 VAC	24 VAC
DC	20 VDC	30 VDC

Please note: When an AC supply is used, one of the connections is connected to the GND. This GND is also used for the Voltage output.

Power supply output

The power out is the same as the power input (single-sided rectified and with capacitor buffered) and has an internal resettable fuse. This power supply can be used to power the 4... 20 mA output.

Inputs: Open and Close

Inputs for driving the output signals are 10 ... 30 VAC/DC (5 ... 20 mA) and optically separated. These inputs have their own COMMON connection. When the input is driven with a triac, it can be that the current of 15 mA is too low for proper working. In this case use a relay.

OPEN: Increase output signal(s)

CLOSE: Decrease output signal(s)

0 ... 20 mA or 4 ... 20 mA current output

The 0 ... 20 mA or 4 ... 20 mA output is optically isolated. In this way, a connection can easily be made with a system that has a different supply potential than the JGA2063.

With DIP-switch 4 you can choose the range of the current output. By default (DIP-switch 4 low) the current output is 0 to 20 mA. When DIP-switch 4 is activated, the current output will work from 4 to 20 mA.

The 4 ... 20 mA output is increased or decreased through the open and close inputs.

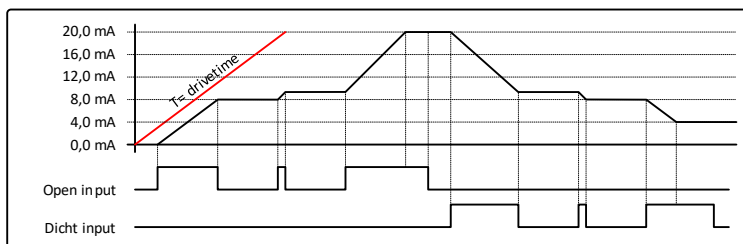


Figure 2: Example of the 0 to 20 mA output

The total run time from min to max can be set on 2 ways:

- Via potentiometer
- Via the settings

Via potentiometer

By default, the JGA2063 is set to use the potentiometer for the drivetime. Via this potentiometer you can set the drivetime from 30 to 240 seconds.

By default, the JGA2063 is set to a drivetime of 135 seconds via the potentiometer.

Via the settings

It's possible to use the BoutronicStudio to set the drivetime. (See chapter 'Setup with the BoutronicStudio' for more information).

When the drivetime is set via the setting, the JGA2063 will not use the value of the potentiometer for the output of the setting. With the settings you can set the drivetime from 10 to 240 seconds.

0 ... 5 or 0 ... 10 V voltage output

The JGA2063 has a voltage output that can drive 0 to 5 VDC or 0 to 10 VDC. By switching DIP-switch 1 you can select the range of the voltage output. By default, the voltage output is set to 0 to 5 VDC (DIP-switch 1 low). By activating DIP-switch 1 you set the range of the voltage output to 0 to 10 VDC.

The voltage output is increased or decreased through the open and close inputs.

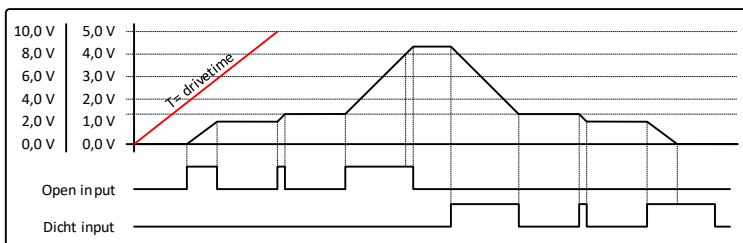


Figure 3: Example of the voltage output

The total run time from min to max can be set on 2 ways:

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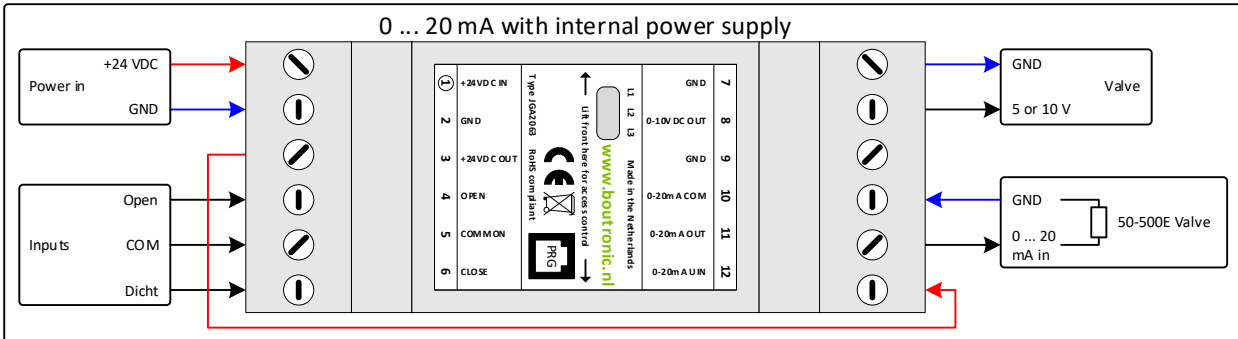
When the drivetime is set via the setting, the JGA2063 will not use the value of the potentiometer for the output of the setting. With the settings you can set the drivetime from 10 to 240 seconds.

Connection examples

In this chapter there are several examples of connecting the JGA2063.

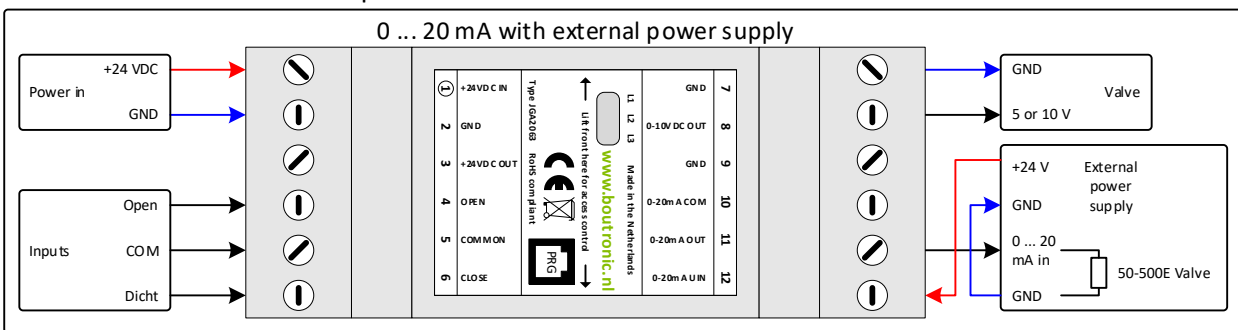
Internal power supply

Below is the connection diagram using the internal power supply. Due to this method, there is no optical separation between the JGA2063 and the external system to which the 0 ... 20 mA is connected. The 0 ... 5 V or 0 ... 10 V has no optical isolation.



External power supply

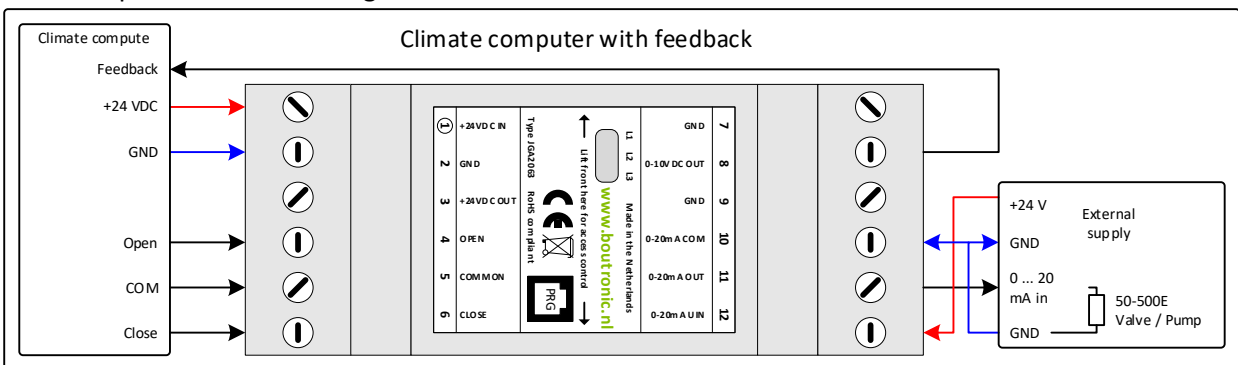
Below is the connection diagram using the external power supply. Due to this method, there is an optical separation between the JGA2063 and the external system to which the 0 ... 20 mA is connected. The 0 ... 5 V or 0 ... 10 V has no optical isolation.



Control with climate computer with feedback

The JGA2063 can be used to convert the OPEN and CLOSE control from a climate computer to a 0 ... 20 mA signal. For a feedback signal the JGA2063 can send a voltage back to the climate computer (0 ... 5 V or 0 ... 10 V max 100 mA).

This example is shown in the figure below:



DIP-switch 1 to 4

On the current print JGA2063 are 4 DIP-switches. With these DIP-switches you can adjust functionalities of the JGA2063.

DIP-switch	OFF	ON	Description
1	0 ... 5 V	0 ... 10 V	Voltage output range
2	No function	Start-up voltage and current	
3	No function	Fast to minimal output levels	Activate by driving both OPEN and CLOSE inputs
4	0 ... 20 mA	4 ... 20 mA	Current output range

DIP-switch 1: Set maximum voltage

With DIP-switch 1 you can set the maximum output voltage of the voltage output:

- When set to OFF, the output is 0 to 5V.
- When set to ON, the output is 0 to 10V.

DIP-switch 2: Set start-up voltage/current

When the JGA2063 starts up the default output levels are 0 mA (or 4 mA) and 0V.

You can change the default start-up values on 2 ways:

- Via the program button
- Via the BoutronicStudio

Via the program button

To set the start-up levels with the program button follow these steps:

- Activate DIP-switch 2 (ON) and leave this ON (activate memory).
- As soon as the outputs are the desired levels, activate both OPEN and CLOSE inputs at the same time (Both OPEN and CLOSE LEDs are on) *.
- When the LED's go off and on again, the levels are saved as start-up levels.
- When you reset the JGA2063 with the DIP-switch 2 to ON, the start-up value will be used.

**Please note: The value will not be saved when DIP-switch 3 is also activated. (The saved start-up value will still be used).*

Via the BoutronicStudio

It's possible to set the start-up levels with the BoutronicStudio.

See chapter 'Setup with the BoutronicStudio' for more information.

DIP-switch 3: Fast to minimal output levels

When DIP-switch 3 is on, the outputs will drop from maximum to minimum in 1 second.

This function can be set as followed:

- Set DIP-switch 3 to on and leave it in this position. (activate)
- Activate both Open and Close inputs to set to minimum levels. As soon as the LED's Open and Close turn off and on, the value is at the minimum level.

*Please note: When DIP-switch 2 is **also** activated, the saved level is set on start-up. (The value of the output cannot be saved anymore)*

DIP-switch 4: Current output 0 to 20 mA or 4 to 20 mA

With DIP-switch 4 you can select the minimal output current:

- When set to OFF, the minimal output current is 0 mA.
- When set to ON, the minimal output current is 4 mA.

Drivetime outputs

The total drivetime of the outputs can be set in 2 ways:

- Via the potentiometer
- By software via the BoutronicStudio

Set the drivetime with the potentiometer

When turning the potentiometer fully to the left, the drivetime is set to 30 seconds. If the potentiometer is set fully to the right, the drivetime is set to 240 seconds.

By default, the potentiometer is set to the centre and therefor the drivetime will be 135 seconds.



Please note: The setting for the drivetime (See chapter 'Setup with the BoutronicStudio') must be set to 0 sec. to use the potentiometer for the drivetime.

By software via the BoutronicStudio

You can set the drivetime of the outputs via the software. When the setting is set to a value higher than 0 sec. the setting is used for the drivetime (The position of the potentiometer is ignored).

Setting the drivetime can be done per output separately.

By the software you can set the drivetime from 10 to 240 seconds or to 0 seconds (use potentiometer).

See chapter 'Setup with the BoutronicStudio' for more information.

Calibrating output levels

You can calibrate the output levels on 2 ways:

- Via the program button
- Via the BoutronicStudio

Via the program button

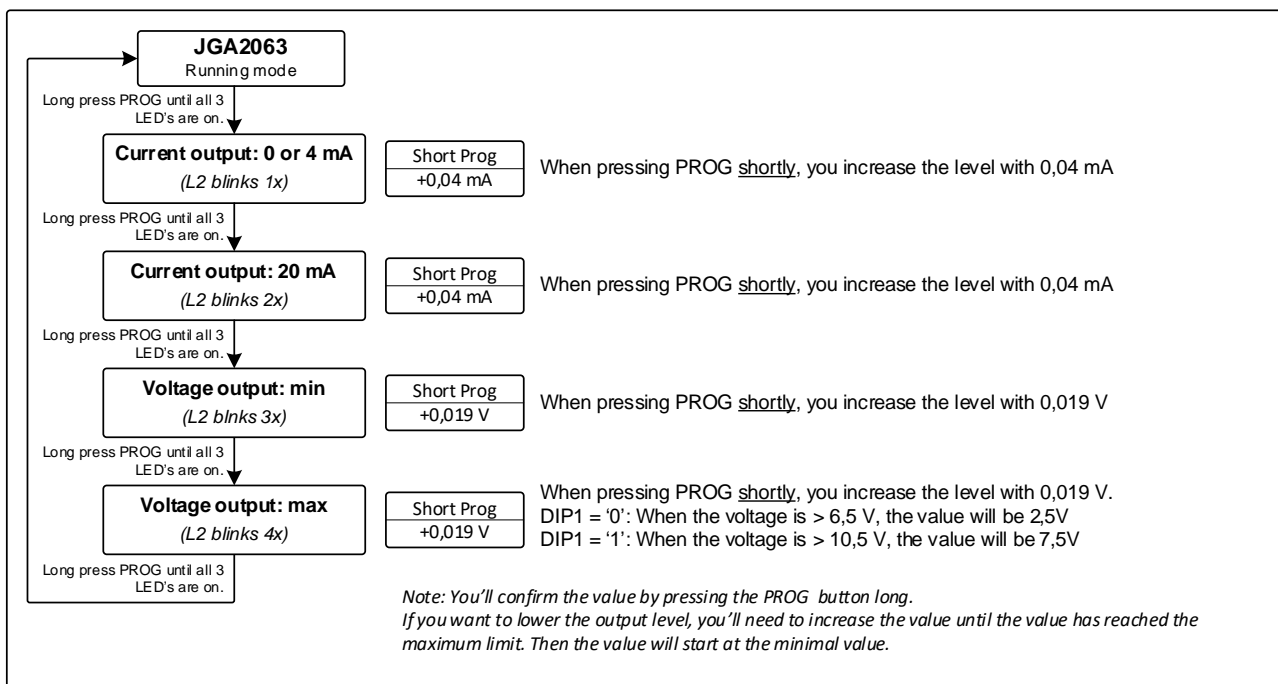
Press the PROG button and hold for 5 seconds until all LED's are turned on.

After releasing the PROG button L2 starts to blink. The current output is driven with the current set minimal value.

- By pressing the PROG button shortly, you increase the value.
(when the upper limit of the value is reached, the next value is the lower limit).
- By pressing the PROG button long (until all LED's are on), you confirm the setting and the current level is stored in the permanent memory.
(This setting will be memorized when the power supply is gone)

Note: When there isn't any activity on the PROG button longer than 1 minute, the JGA2063 will automatically go back to running mode. Calibrating can be done indefinitely.

Menu structure



Via the BoutronicStudio

If you want to change the output levels with the BoutronicStudio, you'll need to follow these steps:

1. Connect the JGA2063 to your computer with a Boutronic USB-dongle.
2. Start the BoutronicStudio.
3. Go to the JGA2063. (CurrentPrint 0 to 20 mA). *
4. Go to the calibration values (Tab System).
5. Drive the JGA2063 fully to the minimum level (Activate CLOSE input).
6. Adjust the minimum values.
Please note: When DIP-switch 4 is not active, you must use the 'Current 0 mA' value.
When DIP-switch 4 is active, you must use the 'Current 4 mA' value.
7. Drive the JGA2063 fully to the maximum level (Activate OPEN input).
8. Adjust the maximum values.
Please note: For the voltage output the 10V values is always used. When DIP-switch 1 is not activated, the values is internally divided by 2.

* See chapter 'Setup with the BoutronicStudio' for more information.

Setup with the BoutronicStudio

You can connect the JGA2063 with the BoutronicStudio (BoutronicStudio 3 v3.0d R0 or higher).
You connect the JGA2063 via the firmware port to your computer with a Boutronic USB-dongle.
Next you can detect the JGA2063 with the BoutronicStudio.



Please note: To operate the JGA2063 with the BoutronicStudio you must use BoutronicStudio 3 v3.0d R0 or higher

See the manual of the BoutronicStudio for more information about detecting a device.

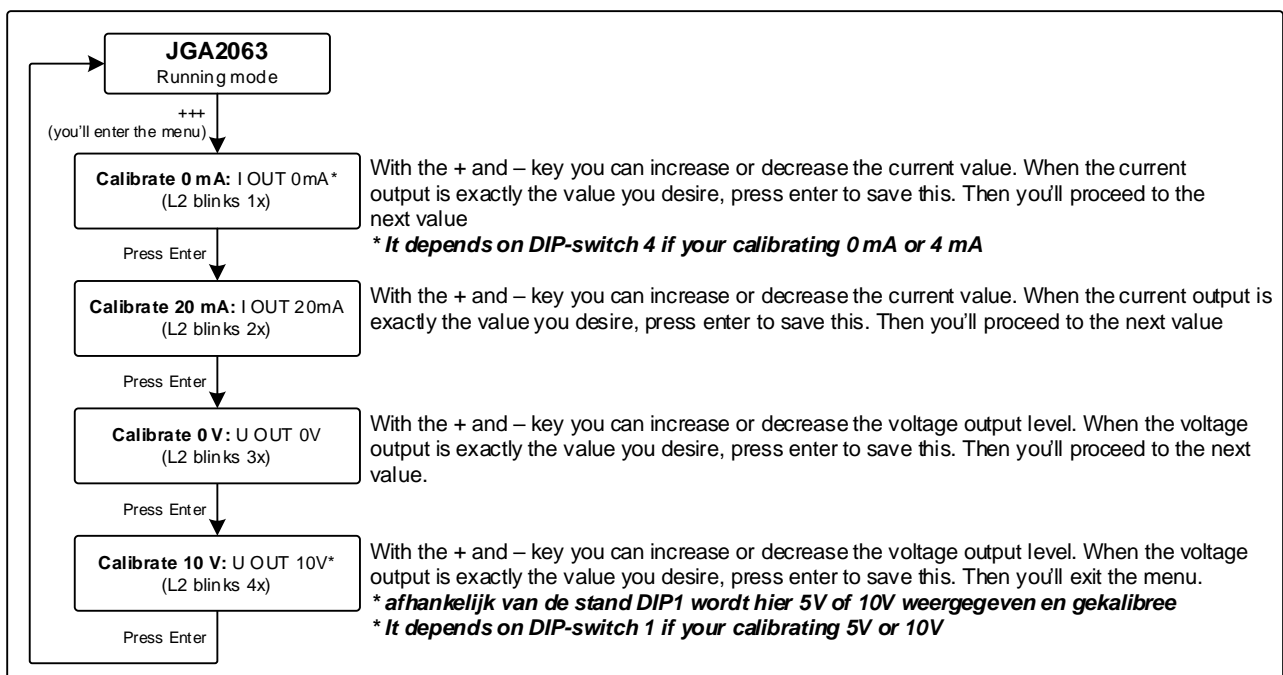
Setup via the Firmware port

You can also set the calibration values of the JGA2063 via the firmware port, to do this follow the following steps:

1. Connect the JGA2063 to your computer via the Boutronic USB dongle.
2. Open the BoutronicStudio with the Terminal tab of the COM port, set the baudrate to 9600 baud and press 'Connect'.
3. Click once with the left mouse button into the black area.
4. Shortly press 3 times plus (+++).
5. The following menu appears:
*** CONFIGMENU ***
I OUT 0mA
6. The current output will set the minimum level (0,0 mA or 4,0 mA).
Change the calibration value:
With the '+' key you can increase the value with 0,04 mA.
With the '-' key you can decrease the value with 0,04 mA
With the 'enter' key you confirm the value and save it into the permanent memory.
With the 'esc' key you'll leave the menu.
With the 'F' key you'll set the JGA2063 back to factory defaults.
With the 'T' key you'll start the test mode (Only used in factory testing).

Note: With the 'F' key you can set the settings back to factory defaults. This must be confirmed by pressing 'Y'. When pressing 'N' you'll cancel the reset.

8. By pressing 'Enter' you confirm the value and save it to the permanent memory.
You'll see: SAVED
9. Now you can calibrate the next value.
10. After the final setting, you'll exit the menu automatically.
When no activity is seen for more than 240 seconds, the calibration will exit automatically.
You'll see: Running



Technical specifications

General

Description	Value	Unit	Remarks
Dimensions	90 x 36 x 57	mm	L x B x H
Mounting	DIN-rail (Top hat rail)		IEC/EN 60715
Material	Plastic ABS		
Weight	75	gram	
Temperature storage	-20 ... +60	°C	
Temperature operational	0 ... 55	°C	
Relative humidity	10 ... 95	%	@ 40°C, non-condensing
Protecting range	IP20		

Power supply

Description	Min	Typ.	Max	Unit	Remarks
Power in	20	24	30	VDC	
	20	24	24	VAC	1
	-	35	-	mA	
Power out	20	-	30	VDC	2
	-	-	150	mA	3

1. Note: one of the phases is directly connected to the GND.
2. This voltage is equal to the power supply in (single-sided rectified and with capacitor buffered)
3. With a resettable fuse

Inputs**Open and close inputs**

Description	Min	Typ.	Max	Unit	Remarks
Separation	-	-	3750	Vrms	Optical
Input voltage	10	24	30	VAC/DC	
Input current	5	15	20	mA	

Outputs

Description	Min	Typ.	Max	Unit	Remarks
Drivetime via potentiometer	30	135	240	sec	
Drivetime via BoutronicStudio	10	0	240	sec	0 = use potentiometer

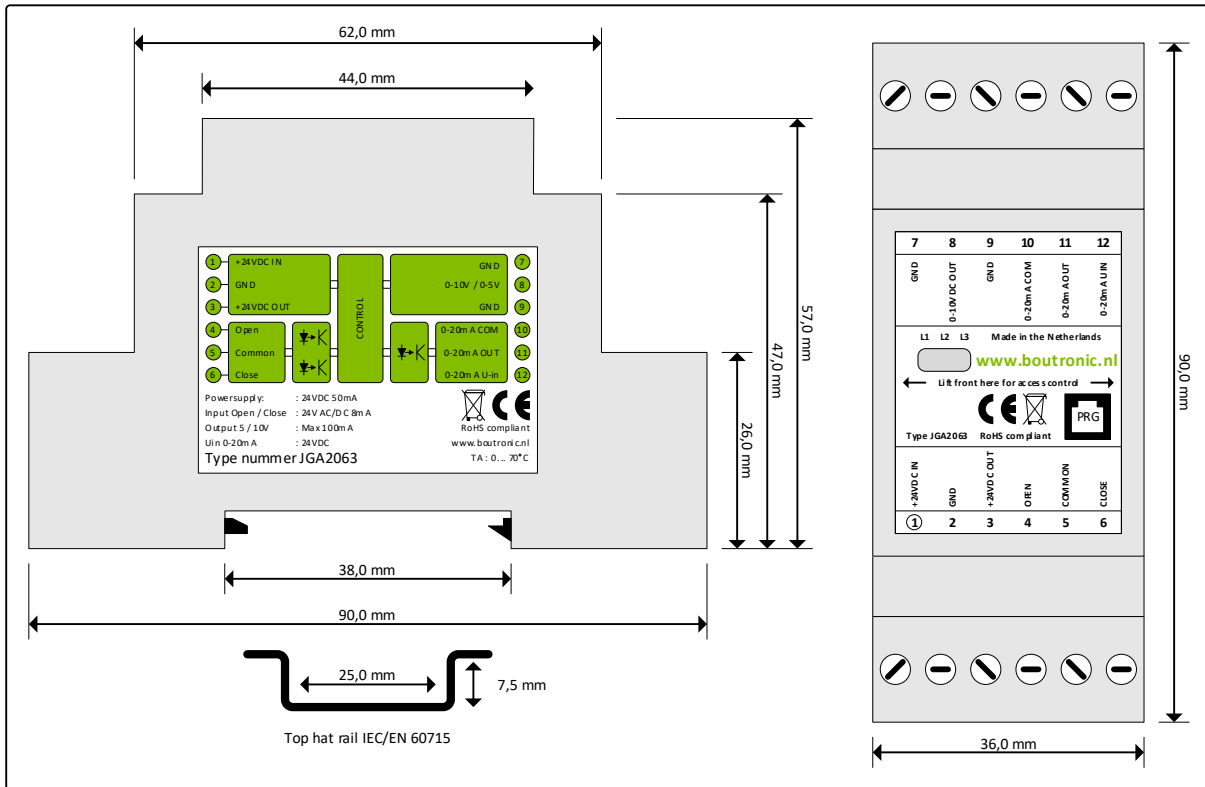
Current output

Description	Min	Typ.	Max	Unit	Remarks
Separation	-	-	2500	Vrms	Optical
Output current	0	-	20	mA	DIP 4 ON = 4 ... 20 mA
Input voltage	20	24	30	VDC	
Resolution		0,04		mA/step	10 bits
Impedance	50	-	500	Ω	

Voltage output

Description	Min	Typ.	Max	Unit	Remarks
Output voltage	0,1	-	6,0	V	DIP-switch 1 OFF
	0,1	-	10,5	V	DIP-switch 1 ON
Resolution	-	0,019	-	V/stap	10 bits
Output current	-	-	100	mA@10 V	

Measurements



Software versions

Software version	Date	Changes
v1.0a	02-09-2022	First version

Checking the software version

You can check the software version by looking at the LEDs on start-up.

v1.0a

When starting up, all 3 LED's will turn on.

Then the LED's will go off one by one in the following order: L1, L2, L3

Appendix A: Settings

The following settings can be changed in the JGA2063:

Setting	Description	Min.	Max.	Default
Current output drivetime	Time to drive the current output from min to max.	10 sec. of 0 sec. for potentiometer	240 sec.	0 sec. for potentiometer
Voltage output drivetime	Time to drive the voltage output from min to max.	10 sec. of 0 sec. for potentiometer	240 sec.	0 sec. for potentiometer
Current output start-up value ¹	The value that the current output will assume on start-up.	0,0 %	100,0 %	0,0 %
Voltage output start-up value ¹	The value that the voltage output will assume on start-up.	0,0 %	100,0 %	0,0 %
Calibration current 0 mA ²	Calibration value used for driving 0 mA to the current output.	0	4095	0
Calibration current 4 mA ²	Calibration value used for driving 4 mA to the current output.	0	4095	(varies)
Calibration current 20 mA ²	Calibration value used for driving 20 mA to the current output.	0	4095	(varies)
Calibration voltage output 0 V ²	Calibration value used for driving 0V to the voltage output.	0	4095	0
Calibration voltage 10 V ²	Calibration value used for driving 10V to the voltage output.	0	4095	(varies)

1. Only when DIP-switch 2 is activated
2. These settings are calibrated in factory.